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DEPARTMENT OF WATER SUPPLY

COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

PETITION TO AMEND INTERIM INSTREAM FLOW STANDARDS FOR HONOPOU, HUELO (PUOLUA), HANEHOI, WAIKAMOI, ALO, WAHINEPEE, PUOHOKAMOA, HAIPUAENA, PUNALAU/KOLEA, HONOMANU, NUAAILUA, PIINAAU, PALAUHULU, OHIA (WAIANU), WAIKAMILO, KUALANI, WAILUANUI, WEST WAILUAIKI, EAST WAILUAIKI, KOPILIULA, PUAKAA, WAIOHUE, PAAKEA, WAIAAKA, KAPAULA, HANAWI, and MAKAPIPI STREAMS	CASE NO. CCH-MA13-01 COUNTY OF MAUI, DEPARTMENT OF WATER SUPPLY'S PROPOSED FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION AND ORDER; CERTIFICATE OF SERVICE

COUNTY OF MAUI, DEPARTMENT OF WATER SUPPLY'S PROPOSED FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION AND ORDER

Comes now, COUNTY OF MAUI, DEPARTMENT OF WATER SUPPLY ("MDWS"), by and through its attorneys, PATRICK K. WONG, Corporation Counsel, and CALEB P. ROWE and KRISTIN K TARNSTOM, Deputies Corporation Counsel and Hereby submits its Proposed

Findings of Fact, Conclusions of Law, and Decision and Order pursuant to Minute Order #24, filed on March 6, 2017.

MDWS' Proposed Findings of Facts, Conclusions of Law and Decision and Order will be submitted by way of supplementing relevant portions of the Hearings Officer's Proposed Findings of Fact, Conclusions of Law and Decision and Order as set forth in Minute Order 16. Proposed additions to those findings and conclusions will be italicized and double underlined, and proposed deletions will be italicized with the strike through feature to distinguish them from the Hearings Officer's earlier submission. MDWS will only be addressing findings and conclusions related to its water needs, use of surface water, and its position on the usage of the central Maui fields pursuant to Minute Order 19.

I. FINDINGS OF FACT

A. Sequence of Events Leading to the Contested Case

46. By way of Minute Order No. 18, dated March 10, 2016, Chairperson Suzanne Case ordered the Contested Case Hearing reopened to address A&B's decision of January 6, 2016 to change HC&S's business operations from farming sugar to a diversified agricultural model. (Minute Order No. 18).

47. Minute Order No. 19 set forth the scope of the reopened hearing as follows:

> *"a. HC&S/A&B's current and future use of surface waters and the impact on the groundwater resources for its central Maui fields of HC&S's cessation of sugar operations;*
> *b. the impact of HC&S's cessation of sugar operations on MDWS' use of surface water; and*
> *c. Maui County's position on the future use of the central Maui fields; and*
> *d. How EMI is managing the decrease in diversions, how it would manage the interim restorations, and any issues concerning the integrity of the EMI ditch system with the current and any future changes in offstream diversions."*

(Minute Order No. 19).

48. Briefing schedules on the reopened hearing were set by way of Minute Order No. 21 and amended by way of Minute Order No. 22. (Minute Order Nos. 21, 22).

49. Hearings commenced on February 6, 2017 and concluded on February 9, 2017, after which the evidentiary portion of the reopened hearing was closed.

50. Schedules for Proposed Findings of Fact, Conclusions of Law, and Decision and Order were set forth and by Minute Order No. 24, and subsequently amended by way of Minute Order No. 25. (Minute Order Nos. 24, 25).

51. Prior to submission of the parties' Proposed Findings of Fact, Conclusions of Law, and Decision and Order, MDWS sent a letter to the Hearings Officer and parties to this contested case on April 5, 2017. The letter requested either that parties stipulated to additional information being placed on the record regarding water quality in the Wailoa Ditch. The parties did not stipulate to supplement the record, and MDWS was instructed to petition the Commission to re-open the evidentiary hearing. (MDWS Letter dated April 5, 2017; Minute Order No. 26).

52. On April 13, 2017, MDWS filed a Motion to Reopen Evidence. HC&S filed a joinder to MDWS Motion Dated April 20, 2017. Maui Tomorrow Foundation, Inc., and Nā Moku Aupuni O Ko`olau Hui, Lurlyn Scott and Sanford Kekahuna filed Memorandums in Opposition on April 20, 2017. On May 10, 2017, the Hearings Officer recommended denial of MDWS' Motion. This Motion was denied by way of Order dated May 31, 2017. (MDWS Motion to Reopen Evidence; Order Denying County of Maui, Department of Water Supply's Motion to Reopen Evidence).

53. A revised schedule for submitting Proposed Findings of Fact, Conclusions of Law, and Decision and Order was set forth by way of Minute Order No. 27. (Minute Order 27).

D. Stream Diversions

2. MDWS *(Page 15, ¶ 12 – Page 17, ¶ 83)*

71. MDWS receives water from EMI through:

a. groundwater from a development tunnel in the Ko`olau Ditch for the Nahiku community;

b. streams in EMI's Haiku Uka watershed through the upper and lower Waikamoi flumes that MDWS maintains to serve its Olinda/Upper Kula and Piiholo water treatment plants;

c. water from the Wailoa Ditch after it enters HC&S's lands to serve its Kamole water treatment plant; and

d. non-potable water from HC&S's Hamakua Ditch[1] at Reservoir 40 to serve the Kula Agricultural Park. (Garrett Hew, WDT, ¶ 20;Garrett Hew, Tr., March 18, 2015, pp. 192-193; David Taylor, WDT, ¶ 7; Exh. C-33.)

72. MDWS diverts stream water directly through its upper and lower Waikamoi flumes, and receives stream waters from EMI's Wailoa Ditch and its continuation as HC&S's Hamakua Ditch, *see* Exh. C-33, attached.

73. The upper Waikamoi flume diverts water from the Waikamoi, Puohokamoa, and Haipuena Streams to the Olinda/Upper Kula water treatment facility. Water for this facility is stored in the 30-million gallon Waikamoi reservoirs and the 100-million gallon Kahakapao reservoirs, *see* Exh. C-33, attached. The Olinda facility's average daily production is 1.6 mgd, with a capacity of 2 mgd. (David Taylor, WDT, ¶ 11; Exh. B-3, p. 25; David Taylor, Tr., March 11, 2015, pp. 47, 140.) [MDWS FOF 25.]

74. The lower Waikamoi flume diverts water from the Waikamoi, Puohokamoa, Haipuaena and Honomanu Streams to the Piiholo water treatment facility. Water for this facility is stored in the 50-million gallon Piiholo Reservoir, *see* Exh. C-33, attached. The Piiholo facility's average daily production is 2.5 mgd, with a capacity of 5 mgd. (David Taylor, WDT, ¶ 10; Eh. B-3, p. 25; David Taylor, Tr., March 11, 2015, p. 47.) [MDWS FOF 24.]

75. The stream flows are variable, so the reservoirs provide storage so that there is a relatively constant amount of water available to the treatment facilities, regardless of streamflow. (David Taylor, Tr., March 11, 2015, p. 49.)

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[1] The source for the Hamakua Ditch is the Wailoa Ditch. *See* Exh. C-33, attached.

76. There are no gages on the Waikamoi flumes, so there is no way to measure the amount of water being diverted from the streams. Because the new upper Waikamoi flume isn't going to be leaking, MDWS assumes that everything that goes in will come out. MDWS measures the reservoir levels every day, so once the new flume is functional, MDWS will be able to calculate how much water is coming from the flume on days when the main intake from the dam is dry, which is most of the days. All of the water coming in will be from the flume. (David Taylor, Tr.,March 11, 2015, pp. 59-60.)

77. EMI's Wailoa ditch, which diverts multiple streams (*see* Exh. C-33 and FOF 61, *supra*), is the source of water for MDWS's Kamole water treatment facility. The Kamole facility's average daily production is 3.6 mgd, with a capacity of 6 mgd. *This capacity could be expanded relatively quickly, however, should MDWS have assurances of greater access to water, as evidenced by recent upgrades to the Iao Surface Water Treatment Plant.* (David Taylor, WDT, ¶ 9; Exh. B-3, p. 24; David Taylor, Tr., March 11, 2015, p. 47.) [MDWS FOF 23.]; Supplemental Declaration of David Taylor on Reopening, ¶¶ 3 – 9; Exhibits "B-073", "B-074."

78. MDWS owns the upper and lower Waikamoi flumes and has a contract with EMI to service the diversions to keep them clear. MDWS takes water directly from the Wailoa ditch. (David Taylor, Tr., March 11, 2015, p. 53.)

79. HC&S's Hamakua ditch (the western extension of the Wailoa ditch), at reservoir 40 (*see* Exh. C-33, attached), is the source of water for Kula Agricultural Park, where two reservoirs have a total capacity of 5.4 million gallons. The Park consists of 31 farm lots which range in size from 7 to 29 acres, and which are owned by the County of Maui. Individual lots are metered and billed by MDWS. (David Taylor, WDT, ¶ 13; Exh. B-4.) [MDWS FOF 27.]

80. MDWS pays EMI $0.06 per thousand gallons ($60/million gallons). (Garrett Hew, WDT, ¶ 21.)

81. The original contract between MDWS and EMI was entered into in 1961, which was replaced by a 1973 "Memorandum of Understanding" with a term of 20 years. Since its expiration, there have been a total of 8 extensions. After the lapse of the most recent extension, EMI has continued to provide water to MDWS through a memorandum dated April 13, 2000. (David Taylor, WDT, ¶ 15; Exhs. B-5-15.) [MDWS FOF 29.]

82. The memorandum provides that MDWS will receive 12 mgd from the Wailoa ditch with an option for an additional 4 mgd, *for a total of 16 MGD*. During periods of low flow, no water will be diverted to lower-elevation ditches, and MDWS will receive a minimum allotment of 8.2 mgd and HC&S will also receive 8.2 mgd. If these minimum amounts cannot be delivered, MDWS and HC&S will receive prorated shares of the water available. (David Taylor, WDT, ¶ 15; Exh. B-5; David Taylor, Tr., March 11, 2015, pp. 53-54; Garrett Hew, Tr., March 18, 2015, pp. 146-147.) [MDWS FOF 30.]

83. Average daily use by MDWS from the Wailoa ditch is 7.1 mgd, which includes water for the Kamole facility, averaging 3.6 mgd (*see* FOF 77, *supra*), and the Kula Agricultural Park. (David Taylor, Tr., March 11, 2015, pp. 81-83.)

L. Noninstream Uses

2. MDWS (*Page 83, ¶ 13 – Page 90, ¶ 19)*

a. Uses

454. MDWS is the sole municipal water provider for the County of Maui. The MDWS Upcountry Water System serves the communities of Kula, Haiku, Makawao, Pukalani, Haliimaile, Waiakoa, Keokea, Waiohuli, Ulupalakua, Kanaio, Olinda, Omaopio, Kula Kai, and Pulehu. (David Taylor, WDT, David Taylor, Tr., March 11, 2015, p. 41.) [MDWS FOF 13.]

455. The population served by the MDWS upcountry system is projected at 35,251 people and includes several businesses, churches, Kamehameha Schools, Hawaiian Homelands, and government facilities. By 2030, the population is anticipated to grow by about 8,424 to a total of 43,675. (Michele McLean, WDT, ¶5; Exh. B- David Taylor, WDT, ¶ 6; David Taylor, Tr., March 11, 2015, p. 41; Michele McLean, Tr., March 12, 2015, pp. 120-127; Exhs. B-1, B-18, B-58.) [MDWS FOF 15, 34.]

456. Approximately 60 percent of MDWS's system is used domestically, and the remaining 40 percent for agricultural purposes. (David Taylor, WDT, ¶ 17; Exh. B-2, pp. 1-2; David Taylor, Tr., March 11, 2015, pp. 44-47.) [MDWS FOF 21.]

457. Approximately 80 to 90 percent of the water delivered within the upcountry system comes from surface water sources, either directly or by way of various raw water storage facilities. (David Taylor, WDT, ¶¶ 7-8, 18; Exh. B-2, Table 2; David Taylor, Tr., March 11, 2015, p. 44.) [MDWS FOF 20.]

458. MDWS relies on three surface water sources, one of which is delivered by EMI through the Wailoa Ditch, and the other two through two MDWS higher-elevation aqueducts maintained by EMI that transport water to Olinda and Kula, under a contractual agreement originated under the 1973 East Maui Water Agreement and subsequent agreements. (Exhs. B-5, B-6, B-7, C-3.) [Na Moku/MTF FOF 844.]

459.

Water Treatment Plant ("WTP")	Elevation	Conveyance System	Production Capacity	Average Production
Olinda	4,200 feet	Upper Kula Flume	2.0 mgd	1.6 mgd
Piiholo	2,900 feet	Lower Kula Flume	5.0 mgd	2.5 mgd
Kamole-Weir	1,120 feet	Wailoa Ditch	6.0 mgd	3.6 mgd

(David Taylor, WDT, ¶ 9-11; David Taylor, Tr., March 11, 2015, p. 47; Exh. B-3, pp. 24-25; Exh. B-16, pp. 6-7.) [MDWS FOF 23-25; Nā Moku/MTF FOF 844.]

460. The Olinda facility diverts water from the Waikamoi, Puohokamoa, and Haipuaena streams. Water is stored in the 30-million gallon Waikamoi Reservoirs (two, at 15 million gallons each) and the 100-million gallon Kahakapao Reservoir. (David Taylor, WDT, ¶ 11; Exh. B-3, p. 25; David Taylor, Tr., March 11, 2015, p. 47.) [MDWS FOF 25.]

461. The Piiholo facility diverts water from the Waikamoi, Puohokamoa, Haipuaena, and Honomanu streams into the 50-million gallon Piiholo Reservoir. (David Taylor, WDT, ¶ 10; David Taylor, Tr., March 11, 2015, p. 47; Exh. B-3, p. 25.) [MDWS FOF 24.]

462. The Kamole-Weir facility, which has no reservoir, relies on water from the Wailoa Ditch, which diverts water from Honopou, Hanehoi, Puolua, Alo, Waikamoi, Puohokamoa, Haipuaena, Kolea, Punalau, Honomanu, Nuaailua, Piinaau, Paluhulu, East and West Wailuanui, West Wailuaiki, East Wailuaiki, Kopiliula, Puakaa, Waiohue, Paakea, Waiaaka, Kapaula, Hanawi, and Makapipi streams. (David Taylor, WDT, ¶ 9; David Taylor, Tr., March 11, 205, p. 47; Exh. B-3, p. 24.) [MDWS FOF 23.]

463. Besides its customers on the Upcountry Water System, *supra*, FOF 454, MDWS also provides non-potable water to the Kula Agricultural Park ("KAP") through diversions from the same streams which serve the Kamole-Weir WTP through the Wailoa Ditch. Water is stored in two reservoirs with a total capacity of 5.4 million gallons. KAP consists of 31 farm lots ranging

in size from 7 to 29 acres, and which are owned by the County of Maui. The individual lots are metered and billed by MDWS. (David Taylor, WDT, ¶ 13; Exh. B-4.) [MDWS FOF 27.]

464. MDWS receives its surface water under a series of contracts with EMI. The original contract was entered into in 1961, and the "Master Water Agreement" was replaced by a 1973 "Memorandum of Understanding" as the primary contract, which had a term of 20 years. Since its expiration, there have been a total of 8 extensions, and after the lapse of the most recent extension, water has continued to be provided through a "Memorandum of Understanding Concerning Settlement of Water and Related Issues" dated April 13, 2000 ("MOU"). (David Taylor, WDT, ¶15; Exhs. B-5 to B-15.) [MDWS FOF 29.]

465. The MOU provides that MDWS will receive 12 mgd with an option for an additional 4 mgd, *for a total of 16 MGD*. During low-flow periods, the County and HC&S will both receive a minimum allotment of 8.2 mgd. If these minimum amounts cannot be delivered, MDWS and HC&S will receive prorated shares of the water that is available. (David Taylor, WDT, ¶ 15; David Taylor, Tr., March 11, 2015, pp. 53-54; Exh. B-15.) [MDWS FOF 30.]

466. Approximately 80 to 90 percent of the water delivered within the upcountry system comes from surface water sources, *supra*, FOF 457, with the remaining 10 to 20 percent coming from a series of basal aquifer wells. The Haiku Well can produce 0.5 mgd, the Pookela Well, 1.3 mgd, and the two Kaupakalua wells, 1.6 mgd, for a total of 3.4 mgd. (Exh. B-16, p. 8.) [Na Moku/MTF FOF 850.]

467. In times of emergency, MDWS may also draw 1.5 mgd from the Hamakuapoko Wells. This water, however, is only available during times of emergency due to concerns over pesticides from former pineapple production. (David Taylor, Tr., March 11, 2015, pp. 61-62.)

468. The combined surface and ground water sources have a production capacity of 17.9 mgd: 13.0 mgd from surface water, *supra*, FOF 459, and 4.9 mgd from ground water (including 1.5 mgd in emergencies from the Hamakuapoko wells), *supra*, FOF 466-467.

469. However, due to occasional maintenance requirements and limitations on the use of the Hamakuapoko Wells, reliable capacity stands at 9.1 mgd. This is premised on the following sources not being available: 1) the largest surface-water facility, the Kamole-Weir at 6.0 mgd production capacity; 2) the Pookela Well at 1.3 mgd production capacity; and 3) Hamakuapoko Wells at 1.5 mgd, which is only available at times of emergency. These three sources total 8.8

mgd, potentially reducing total production capacity of 17.9 mgd to 9.1 mgd. (David Taylor, Tr., March 12, 2015, pp. 68-69.)

470. Customer usage based on meter readings between 2004 and 2013 average 7.9 mgd, varying between 6 mgd and 10 mgd. (Exhs. B-2; B-16, p. 3, table 3; B-21, p. 14, figure 1.) [MDWS FOF 33.]

471. There are currently 9,865 water connections to the Upcountry System. As of June 30, 2014, there were 1,852 applicants on the County's waiting list for new water connections. MDWS contends that if all were connected to the Upcountry System, water demand would increase by approximately 7.5 mgd, or 95 percent of current usage of 7.9 mgd, *supra*, FOF 470. However, because of the high cost of these connections, approximately half of the applicants who have been offered new meters have declined. ~~*and MDWS anticipates that this trend will continue, leaving demand at about 3.75 mgd. (David Taylor, WDT, ¶¶ 20-23.)*~~ *For the purposes of planning for the development of infrastructure, however, MDWS relies upon the full amount of this projected need due to uncertainties in anticipating future needs. (David Taylor, Tr., February 8, 2017, pp. 375, ¶ 13 – 376, ¶ 25.*

472. MDWS explained that its current 9,865 water connections use an average of 7.9 mgd, and it expects that the additional 1,852 applicants, if meters are granted, would increase usage by 7.5 mgd, or 95 percent, because some of those applicants are asking for multiple meters for subdivisions. Therefore, 1,852 applicants represent many, many more actual meters. Staff engineers went through each of the applications, did an estimate for each one, and came up with the increased usage of 7.5 mgd. (David Taylor, Tr., March 11, 2015, p. 67-69.)

473. MDWS also expects that by 2030 the population of the area served by the Upcountry System is anticipated to grow by about 8,424, from 35,251 to 43,675, with a predicted additional need for water of 1.65 mgd. (Michele McLean, WDT, ¶ 5; Michele McLean, Tr., March 12, 2015, pp. 120-127; David Taylor, WDT, ¶ 24; David Taylor, Tr., March 11, 2015, pp. 76-78; Exhs. B-1; B-2, amended table 5; B-16, table 3;B-18; B-58.) [MDWS FOF 34-35.]

474. MDWS anticipates that it will need to develop between 4.2 mgd and 7.95 mgd to meet demands through 2030, including present use, expected increased demand due to population growth, and a percentage of new connections from the current priority list for meters. (David Taylor, WDT, ¶ 25.)

b. Losses

475. The 1.1-mile Waikamoi Flume transports surface water from the intakes at Waikamoi, Puohokamoa, and Haipuaena streams to the Olinda WTP. Water is stored in the 30-million gallon Waikamoi Reservoirs (two, at 15 million gallons each) and the 100-million gallon Kahakapao Reservoir, *supra*, FOF 460.

476. Over the years, the Waikamoi Flume became so leaky that MDWS estimated it lost as much as 40 percent of total flow through cracks and holes along its whole length. (Exh. B-54, pp. 27-29; Exh. E-114, p. 8.) [Nā Moku/MTF FOF 907-908.]

477. MDWS could not measure actual losses, because it had no mechanism for quantifying water levels at either the intake or discharge sites of the Waikamoi Flume. (David Taylor, First Supplemental Declaration, ¶ 5.) [Nā Moku/MTF FOF 911.]

478. If the reliable capacity of the Olinda WTP is the reported 1.6 mgd, *supra*, FOF 459, then the flume could have wasted as much as 0.64 mgd (1.6 mgd x 0.40) at that level of operation. (Nā Moku/MTF FOF 910.)

479. MDWS has just completed replacing the entire Waikamoi Flume. (David Taylor, Tr., March 11, 2015, pp. 55-59.)

480. Because the new flume isn't going to be leaking, MDWS assumes that everything going in will come out. They measure the reservoir levels every day, and also know how much water is taken out to the water treatment plant. So MDWS will be able to calculate how much water is coming from the flume on days when the main intake from the dam is dry, which is most of the days. All of the water coming in wil be from the flume, so MDWS will be able to quantify how much water comes in from the flume most of the time. (David Taylor, Tr., March 11, 2015, p. 60.)

481. There is no way to accurately compare intake versus outtake of the Waikamoi Flume prior to versus completion of the replacement flume. (David Taylor, Tr., March 11, 2015, p. 60.)

482. Further, the two 15 million-gallon Waikamoi reservoirs as well as the 2 million-gallon on-site basin at the Olinda WTP have just been relined. (David Taylor, Tr., March 11, 2015, p. 54-55.)

c. Alternate Sources

483. MDWS has no plans to drill new production wells to serve the Upcountry areas at the present time. They are very expensive, use a lot of energy, and there are some legal and procedural difficulties:

1. Water is very heavy, so moving it to higher elevations takes a lot of energy. Because a lot of the Upcountry System is at 1,000 to 4,000 feet and the basal aquifer is roughly at sea level, moving water is projected to cost $1.64 per thousand gallons for distribution from the Kamole-Weir WTP, $4.07 per thousand gallons at the Piiholo WTP, and $5.93 per thousand gallons at the Olinda WTP. On top of pumping costs, increased reliance on ground water sources would require substantial initial capital expenditures and on-going maintenance. Ground water development also involves risks due to the uncertainty of the quantity and quality of water that will be presentt. MDWS's current charges for water only average about $4 per thousand gallons, so just the electrical costs is more than what MDWS charges overall for its entire operation. (David Taylor, Tr., March 11, 2015, pp. 62-65; David Taylor, Tr., March 12, 2015, pp. 17-19, 52; Exh. B-16, pp. 10, 14, 16.) [MDWS FOF 39-43.]

2. MDWS has entered into a Consent Decree in the case of Coalition to Protect East Maui Water Resources v. Board of Water Supply, County of Maui, Civil No. 03-1-0008(3), December 2003, which requires that MDWS conduct vigorous cost/benefit analyses of other water source options before developing ground water in the East Maui region. On several occasions, MDWS has tried but been unsuccessful in working within the framework of the consent decree to develop new ground water sources. (David Taylor, WDT, ¶¶ 29-30; David Taylor, Second Supplemental Declaration, ¶¶ 26-28; David Taylor, Tr., March 11, 2015, pp. 64-65; Exhs. B-19, B-20, B-52.

484. New raw water storage facilities, which would be fed by streams in times of water surplus for use during times of low flows, are an additional means by which MDWS could mitigate the effects of stream flow restoration:

1. Currently, MDWS is considering construction of a 100- to 200-million gallon reservoir at the Kamole-Weir WTP, which has no reservoir, *supra*, FOF 462, and has allocated $1.5 million in its FY2015 budget toward land acquisition for a possible reservoir. The total six-year estimated cost for the project is $25.25 million. No money

has been allocated for design or construction. (David Taylor, First Supplemental Declaration, ¶¶ 10-11; David Taylor, Second Supplemental Declaration, ¶ 24; David Taylor, Tr., March 11, 2015, pp. 50-53; Exhs. B-16, p. 13 table 13; E-124.) [MDWS FOF 45-46.]

2. Like new basal groundwater source development, development of new raw water storage would require significant initial capital expenditures and on-going maintenance costs. (David Taylor, Tr., March 12, 2015, pp. 19-24; Exh. B-16, pp. 14, 16 table 4.) [MDWS FOF 47.]

485. Raw water storage at the Kamole WTP is more cost-effective than providing backup capacity by extensive additions of basal groundwater wells, which require high long-term energy expenditures. (Exh. E-147, p. 48.) [Nā Moku/MTF FOF 952-953.]

486. Reservoirs mitigate fluctuations in both stream flow and consumer demand, and mitigations in fluctuations in stream flow allow more of it to be used at the proper time; i.e., during drier times when it is most needed for irrigation, by making more water available without simultaneously taking directly from the water source being protected. (David Taylor, WDT, ¶ 10; Richard Mayer, Supplemental Declaration, ¶¶ 13-14.) [Nā Moku/MTF FOF 949-950.]

d. Economic Impact

487. A study conducted for the Draft "Maui Water Use and Development Plan ("WUDP") Upcountry Final Strategies Report" (July 25, 2009) examined the impacts of amended IIFS on drought period reliable capacity at the Kamole-Weir water treatment plant. (Exh. E-130.)

488. In 2014, MDWS also commissioned an engineering analysis of the impact to MDWS if the County's use of East Maui surface water were reduced or eliminated, based on documents provided by MDWS, including the July 25, 2009 Draft WUDP for MDWS's Upcountry System. (Exh. B-16.)

489. The 2014 review and analysis compared new groundwater sources versus construction of raw water storage reservoirs to mitigate Upcountry drought conditions. New reservoirs carry high capital costs but have lower operation and maintenance costs compared to groundwater wells. New wells carry relatively lower capital costs but also require transmission and storage improvements to be integrated into the existing water delivery systems, have risks associated with the uncertainty of the quantity and quality of water that will be present, and have higher

operational costs due to the costs of pumping ground water from basal aquifers at sea level to the Upcountry system. (Exh. B-16, p. 14.)

490. Life-cycle cost comparisons were made, with new ground water sources and construction of storage reservoirs carrying similar life-cycle costs. Life-cycle costs incorporate capital, operating, and maintenance costs over a defined planning period and include inflationary effects. Over a 25-year period, both new ground water wells and reservoirs would cost about $33-$35/thousand gallons, for a total of $250 to $260 million for each strategy. (Exh. B-16, p. 15.)

491. The Kamole-Weir WTP has no storage reservoir, while both the Olinda and Piiholo WTPs have reservoirs, *supra*, FOF 460-462. The Kamole-Weir WTP has a production capacity of 6 mgd and an average production of 3.6 mgd, *supra*, FOF 459.

492. Under the MOU between EMI and MDWS, MDWS can receive 12 mgd with an option for an additional 4 mgd *for a total of 16 MGD*. During low-flow periods when ditch flows are greater than 16.4 mgd, both will receive a minimum allotment of 8.2 mgd. If these minimum amounts cannot be delivered, both will receive prorated shares of the water that is available, *supra*, FOF 464-465. In recent periods of low Wailoa Ditch flow, EMI has not restricted the allotment of water to MDWS according to the terms of the agreement, and MDWS withdrawals have been limited only by the amounts of water available in the ditch and the physical limitations of the existing Kamole-Weir WTP intake structures. During drought conditions, MDWS may withdraw 6 mgd, and what remains is used by HC&S for irrigation. (Exhs. E-130, p. 4; Exh. B-16, p. 10.)

493. For the period 1922 to 1987, flows in the Wailoa Ditch exceeded 40 mgd more than 90 percent of the time and exceeded 20 mgd more than 99 percent of the time. (Exh. E-130, p. 4.)

494. Assuming a drought period exists if water available to MDWS is less than the 6 mgd capacity of the Kamole-Weir WTP, recent existing reliability was 4.5 mgd drought period yield, with raw water requirements assumed to be 5.0 mgd to provide 4.5 mgd of potable water capacity.[2] (Exh. E-130, p.6.)

[2] The study uses 4.5 mgd or 4.6 mgd for various reasons. 4.6 mgd will be used to simplify the discussion.

495. For the 23,680-day period of record from 1922 to 1987, assuming a daily withdrawal of 5.0 mgd from the Wailoa Ditch, there was deficient water on 54 days (0.23 percent of the time) with a maximum of 16 consecutive days of deficiency. (Exh. E-130, p. 7.)

496. For the ten-year period 2001 to 2011, the number of days when the Wailoa Ditch flow was less than 20 mgd was 50 days, and the longest continuous span of no flow was 5 days. (Exh. B-16, p. 11 table 12.)

497. There would be little or no impact if Wailoa Ditch flows were reduced by 15 mgd. MDWS would not have full access to the 6 mgd capacity of the Kamole-Weir WTP for 5 days, the same as for the period 2001 to 2011, *supra*, FOF 496, and less than the maximum of 16 days for the period 1922 to 1987, *supra*, FOF495. (David Taylor, Tr., March 11, 2015, pp. 145-146; Exh. B-16, p. 16.)

498. With a 20 mgd reduction in Wailoa Ditch flow and assuming a daily drought period withdrawal of 5.0 mgd, *supra*, FOF 494, there would not be sufficient water to provide reliable drought period capacity without some mitigating actions. For a 23,680 day period, *supra*, FOF 495, 5.0 mgd would not be able to be withdrawn for 822 days or 3.47 percent, with 54 consecutive days of deficiency. (Exh. E-130, p. 9.)

499. Note, however, that the deficiency only means that 5 mgd could not be withdrawn. Lesser amounts could still be withdrawn from the Wailoa Ditch. Furthermore, while the study defined drought period deficiency as being less than 4.6 mgd of a total capacity of 6 mgd, actual use from the Kamole-Weir WTP has been 3.6 mgd out of the total capacity of 6 mgd, *supra*, FOF 459.

500. With the addition of a 100-million gallon reservoir at the Kamole-Weir WTP, the drought period reliable yield with the 20 mgd reduction in Wailoa Ditch flow would be 4.6 mgd, approximately equal to the existing WTP reliable yield without reductions in ditch flows. (Exh. E-130, p. 10.)

501. With a 200-million gallon reservoir, the drought period reliable yield with the 20 mgd reduction in Wailoa Ditch flow increases to 7.1 mgd, an increase of 2.4 mgd compared to a 100-million gallon reservoir and greater than the total capacity of 6 mgd of the Kamole-Weir WTP. (Exh. E-130, p. 10.)

502. Estimated costs of a 100- to 200-million reservoir at the Kamole-Weir WTP are $25.25 million, *supra*, FOF 484, and life-cycle costs over 25 years are estimated at $33 per thousand gallons or $250 million, *supra*, FOF 490. (Exh. B-16, p. 15.)

M. Land Use of the Central Maui Fields

1. Zoning

503. The lands utilized by HC&S/A&B for sugar cultivation which rely on surface water from the streams that are the subject of this contested case hearing ("HC&S/A&B Central Fields") are predominantly zoned as Agricultural District and are situated in the State Agricultural District. Declaration of Michele McLean on Reopening ("McLean Reopening Dec.") ¶ 4.

504. The regulations relevant to lands that are situated in the State Agricultural District and zoned County Agricultural District are Hawaii Revised Statutes §§ 205-2(d) and 205-4.5 and Maui County Code § 19.30A, respectively. McLean Reopening. ¶ 5.

505. The use of land designated as Agricultural District is limited to agriculture, land conservation, agricultural parks, animal and livestock raising (including animal feed lots and sales yards), private agricultural parks, minor utility facilities, retention, restoration, rehabilitation, or improvement of buildings, sites, or cultural landscapes of historical or archaeological significance or solar energy facilities, as set forth by MCC § 19.30A.050(A).

506. MCC § 19.30A.050(B) does allow for certain accessory uses, but those uses must be "incidental or subordinate to, or customarily used in conjunction with" one of the uses set forth in MCC § 19.30A.050(A). MCC § 19.30A.050(B). Such subordinate uses include:

- *Two farm dwellings per lot (one of which must be less than one 1,000 square feet);*
- *One farm laborer dwelling per five acres of lot area (if the farm meets certain criteria);*
- *Two commercial agricultural structures, storage, wholesale and distribution structures (if they are of a type typically associated with the principal permitted use or with agriculture in the county);*
- *Processing of agricultural products;*
- *Small-scale energy systems;*
- *Small-scale animal keeping;*
- *Animal hospitals;*
- *Animal boarding facilities;*
- *Riding academies;*
- *Open land recreation (such as hiking, camping, fishing, hunting, equestrian activities, rodeo arenas, arboretums, greenways, botanical gardens, tours, hang gliding, paragliding, mountain biking and restroom facilities);*

- *Bed and breakfast homes (subject to certain criteria);*
- *Short-term rental homes;*
- *Parks for non-commercial public use (excluding golf courses);*
- *Family child care homes; and*
- *Certain commercial agricultural structures that sell products produced on the lot (including stands, farmers markets, agricultural retail, and agricultural food establishments).*

MCC §§ 19.30A.050(B), 19.30A.072.

507. MCC § 19.30A.030 sets forth the standards for property that is zoned Agricultural District. The minimum lot area for property zoned Agricultural district is two acres, with a minimum width of 200 feet. MCC §§ 19.30A.030(A), (B). The size of farm dwellings is limited to 10% of the total lot area, with a maximum height of 30 feet. MCC §§ 19.30A.030(D), (E). While Agricultural lots may be subdivided, subdivision is limited on a sliding scale pursuant to MCC § 19.30A.030(G) as outlined in the chart below:

Area of Lot in acres	*Maximum number of permitted lots*			
	2-acre min.	*15-acre min.*	*25-acre min.*	*40 acre min.*
At least 2 but less than 31	*7*			
At least 31 but less than 61	*7, plus one additional lot for each 10 acres above 31 acres*			
At least 61 but less than 92	*10, plus one additional lot for each 15 acres; plus ↑*	*1*		
Over 92	*12, plus one additional lot for each 40 acres above 92 acres*	*2, plus one additional lot for each 60 acres above 92 acres; plus ↑*	*1, plus one additional lot for each 100 acres above 92 acres; plus ↑*	*One for each 160 acres above 92 acres*

	(not to exceed 14 lots); plus ↑			

2. Countywide Policy Plan

508. The Countywide Policy Plan ("CPP") was adopted in 2010 to provide an over-arching values statement and policy framework for development of the Maui Island Plan/General Plan 2030 and the community plans. The CPP sets forth "a series of broad themes and goals, each supported by more specific objectives, policies and implementing actions." Declaration of Kathleen Ross Aoki on Reopening ("Aoki Reopening Dec.") ¶ 5; Exhibit "B-064," p. 43; Kathleen Ross Aoki, Tr., February 8, 2017, p. 396, ¶¶ 8-9.

509. One such core principal is to "protect the natural environment," with the objective to "improve the opportunity to experience the natural beauty and native biodiversity of the islands for present and future generations" through policies that "protect and provide ongoing care for important scenic vista, view planes, landscapes and open-space resources." Aoki Reopening Dec. ¶ 6; Exhibit "B-064", p. 46.

510. Another core principle of the CPP is to "promote sustainable land use and growth management" with the objective to "improve planning for and management of agricultural land and rural areas" through policies that "protect prime, productive, and potentially productive agricultural lands to maintain the islands' agricultural and rural identities and economies," "discourage developing or subdividing agriculturally designated lands when non-agricultural activities would be primary uses," and "conduct agricultural development planning to facilitate robust and sustainable agricultural activities." Exhibit "B-064," p. 75.

511. Another objective under the core principle to "strengthen the local economy." One objective under this principal is to "diversify and expand sustainable forms of agriculture" through policies that "prioritize the use of agricultural land to feed the local population and promote the use of agricultural lands for sustainable and diversified agricultural activities," "assist farmers to help make Maui County more self-sufficient in food production," "support ordinances, programs and policies that keep agricultural land and water available and affordable to farmers," and "support cooperatives and other types of nontraditional and communal farming efforts." Exhibit "B-064," p. 61.

3. ***Maui Island Plan/General Plan 2030***

512. Long-term planning for the County of the Maui is controlled by the Maui Island Plan/General Plan 2030 ("MIP"), which was officially adopted in 2012. Exhibit "B-065"; Aoki Reopening Dec. ¶ -7.

513. The MIP is "a blue print that provides direction for future growth, the economy, and social and environmental decisions on the island through 2030" and which "established a vision, founded on core values that break down into goals, objectives, policies, and actions." Exhibit "B-065," p. 1-1.

514: MIP recognizes that "preserving agricultural lands is important for the long term sustainability of Maui." The MIP cites multiple reasons for the importance of maintaining agriculture. For one, the MIP finds that "agriculture creates a diversity of jobs, generates tax revenue, and produces a variety of crops for different local and export markets," "benefits Maui's tourism industry by providing green landscapes and enhancing the island's sense of place," and "protects land use options for future generations." Exhibit "B-063," pp. 7-3, 7-7.

*515: The MIP cites as an objective to "significantly reduce the loss of productive agricultural lands" through policies that "strongly discourage the conversion of productive and important agricultural lands (**such as sugar**, pineapple and other produce lands) to rural or urban use...," "provide incentives for landowners to preserve and protect agricultural lands from development...," and "support and promote the viability of Maui's agricultural businesses..." Exhibit "B-063," p. 7-8.*

*516. In addition, the MIP cites an objective to "**maintain or increase** agriculture's share of the total island economy" through policies "encouraging the continued viability of sugar cane production, or other agricultural crops, in central Maui and all of Maui island." Exhibit "B-066," p. 4-20 (emphasis added).*

517. One of the guiding land use principles contained in the Direct Growth Plan of MIP states:

> ***Protect open space and working agricultural landscapes**: In light of continuing urbanization, the protection of agricultural and open-space resources will depend on a healthy agricultural industry and progressive planning and regulation. Planning should utilize agricultural lands as a tool to define the edges of existing and*

planned urban communities, apply innovative site design, create buffers along roadways, provide visual relief, and preserve scenic views.

Exhibit "B-067," p. 8-10 (emphasis added).

518. The MIP additionally cites many objectives related to diversification of agriculture. The MIP states that "increasing local consumption of Maui agricultural goods is a long-term opportunity for stabilizing and expanding agriculture. Besides economic benefits to farmers, substituting locally-produced food for imports could allow Maui to become more self-sufficient." Exhibit "B-066," p. 4-16.

519. One of the goals outlined in the MIP is that "Maui will have a diversified agricultural industry contributing to greater economic, food, and energy security and prosperity," which will be pursued through policies that "strive to substitute food/agricultural product imports with a reliable supply of locally produced food and agricultural products," "encourage growing a diverse variety of crops and livestock to ensure the stewardship of our land while safeguarding consumer safety" and "promote the development of locally-grown and ecologically-sound biofuels, aquaculture and forest products." Exhibit "B-066," pp. 4-19, 4-20.

520. In addition, the MIP specifically identifies "HC&S land in Paia and HC&S land in Puunene" as "potential areas...for biomass energy crop production." Exhibit "B-066," p. 4-17.

521. Another goal outlined in the MIP is to "reduce the island's dependence on off-island agricultural products..." through policies that "support an incentive package for productive Agricultural Lands which aims to ensure agricultural viability for small and commercial-scale agricultural producers" and "actively look to acquire land and provide infrastructure to expand the agricultural park and establish new agricultural parks." Exhibit "B-063," p. 7-9.

4. Community Plans

522. Community plans set forth the current and anticipated conditions of the designated region, and advance planning goals, objectives, policies, and implementation considerations to guide decision making for the region that is consistent with the Maui Island Plan/General Plan, while recognizing the unique values and attributes of Maui's different communities. Aoki Reopening Dec. ¶ 12.

523. The HC&S/A&B Central Fields fall within four Community Plan Districts: Wailuku-Kahului/Central Maui; Kihei-Makena/South Maui; Makawao-Pukalani-Kula/Upcountry Maui; and Paia-Haiku/North Maui. Aoki Reopening Dec. ¶ 13; Exhibit "B-068"; Kathleen Ross Aoki, Tr., February 8, 2017, p. 396, ¶¶ 12 -22.

a. Makawao-Pukalani-Kula/Upcountry Maui

524. The Makawao-Pukalani-Kula/Upcountry Maui Community Plan (MPKCP) was adopted in 1996, and includes the towns of Makawao, Pukalani, Kula, Ulupalakua, Haliimaile, Waiakoa, Keokea, Waiohuli, Kanaio, Olinda, Omaopio and Pulehu, as well as the Kula Agricultural Park. Aoki Reopening Dec. ¶ 15.

*525. For economic activity, the MPKCP encourages policies that "**provide for the preservation and enhancement of agricultural lands and operations, emphasizing the importance of promoting diversified agriculture** to the region's economic base and lifestyle," "protect existing agricultural operations from urban encroachment," "preserve agriculture by actively promoting locally grown agricultural products," and "encourage the continuation of sugar, pineapple, cattle ranching, and diversified agriculture as major agricultural activities in the region and at the same time encourage the pursuit of alternative agricultural industries." Exhibit "B-069," pp. 18, 19 (emphasis added).*

526. In terms of land use, the MPKCP calls for development of policies which "recognize the value of open space, including agricultural lands and view plans to preserve the region's rural character," "discourage speculation of agricultural lands," "encourage land use patterns that will...support the long term viability of agriculture," "encourage the use of mechanisms such as land trusts and farm trusts to preserve open space and agricultural activity," "make available agricultural lands for those who wish to farm," and "explore the development of an additional Ag park." Exhibit "B-069," pp. 19, 20, 23.

527. The MPKCP's environment recommendations encourage policies that would "preserve environmental resources by maintaining important agricultural lands as an integral part of the open space setting in each community," and "recognize agricultural lands as an essential ingredient to the upcountry atmosphere." Exhibit "B-069," p. 26.

528. The MPKCP also promotes policies to "encourage the development of cooperative agricultural development programs between the County and the Department of Hawaiian Home

Lands to support diversified agricultural pursuits (i.e., programs, for example, which may identify opportunities for creating efficiencies in scale which will benefit all Upcountry farmers)." Exhibit "B-069," p. 30).

b. Paia-Haiku/North Maui

529. The Paia-Haiku/North Maui Community Plan (PHCP) was adopted in 1995, and includes the towns of Spreckelsville, Paia, Haiku, Kuau, Kuiaha and Pauwela. Aoki Reopening Dec. ¶ 17.

530. For land use, the PHCP promotes policies that "ensure that appropriate lands are available to support the region's current and future agricultural industries, including sugar, pineapple, diversified agriculture and aquaculture," and "identify prime or productive agricultural lands and develop appropriate regulations for their protection." Exhibit "B-070," p. 14.

*531. Policies promoted by the PHCP for economic activity include "**Maintain agriculture as the primary economic activity**. Enhance opportunities for the cultivation and processing of local agricultural products and encourage the establishment of agricultural parks and support services (i.e., co-op facilities for distribution, marketing and sales) to enhance diversified agricultural activities," and "encourage the State Department of Agriculture to draft or propose a master plan to promote diversified agriculture by expanding agricultural programs, identifying the specific uses of those agricultural lands, and locating a site(s) for an agricultural park." "Exhibit "B-070," p. 14(emphasis added).*

c. Wailuku-Kahului/Central Maui

532. The Wailuku-Kahului/Central Maui Community Plan ("WKCP") was adopted in 2002 and includes the communities of Wailuku, Kahului, Waiehu, Waihee, Waikapu, and Puunene. Aoki Reopening Dec. ¶ 19.

533. In terms of economic activity, the WKCP promotes policies that "support agricultural production so agriculture can continue to provide employment and contribute to the region's economic well-being" and "support the establishment of agricultural parks for truck farming, piggery operations, bee keeping and other diversified agricultural operations within large unsubdivided agricultural parcels and in locations that are compatible with residential uses." Exhibit "B-071," pp. 12, 13.

534. In regards to the environment, the WKCP encourages policies that "preserve agricultural lands as a major element of the open space setting that which borders the various communities within the planning region. The close relationship between open space and developed areas is an important characteristic of community form." Exhibit "B-071," p. 14.

535. Finally, in regards to land use, the WKCP encourages policies that will "ensure that adequate lands are available to support the region's present and future agricultural activities," "identify prime or productive agricultural lands, and develop appropriate regulations for their protection." Exhibit "B-071," p. 26.

d. Kihei-Makena/South Maui

536. The Kihei-Makena/South Maui Community Plan (KMCP) was adopted in 1998, and includes the towns of Kihei, Wailea, Makena and Maalaea. Aoki Reopening Dec. ¶ 21.

537. In terms of land use, the KMCP promotes policies that would "prevent urbanization of important agricultural lands" and "allow special permits in the State Agricultural Districts to accommodate unusual yet reasonable uses including: (1) limited agriculturally related commercial, public and quasi-public uses serving the immediate community; (2) uses clearly accessory or subordinate to a principal agricultural use on the property; (3) public facility uses such as utility installations or landfills whose location depends on technical considerations; and (4) extractive industries, such as quarrying, where the operation would not adversely affect the environment or surrounding agricultural uses." Exhibit "B-072," pp. 18-19.

538. For economic activity, the KMCP promotes policies that "provide for the preservation and enhancement of important agricultural lands for a variety of agricultural uses, including sugar cane, diversified agriculture and aquaculture." Exhibit "B-072," pp. 18-19.

II. CONCLUSIONS OF LAW

E. Noninstream Uses

2. MDWS (Page 111, ¶ 22 – Page 115, ¶ 5)

a. Uses

114. MDWS provides two types of surface water to its users: 1) potable water from its Olinda, Piiholo, and Kamole WTPs, with a combined capacity of 13 mgd and an average daily production of 7.7 mgd; and 2) non-potable water from HC&S's Hamakua Ditch at Reservoir 40

for the Kula Agricultural Park, with two reservoirs with a total capacity of 5.4 million gallons and average daily use of 3.5 mgd. (FOF 71, 73-74, 77, 79, 83.)

115. Current unmet demand is ~~approximately~~ *between 3.75 and 7.5* mgd, and by 2030, there is a predicted additional need for 1.65 mgd. MDWS anticipates it will need to develop between 4.2 mgd and 7.95 mgd *in new sources* to meet demands through 2030. (FOF 471, 473-474.)

116. MDWS is a purveyor of domestic water uses of the general public, particularly drinking. In this capacity, MDWS serves one of the purposes of the public trust, *supra*, COL 11.

117. "Domestic use" as defined in the Code is distinct from "domestic uses of the general public." In the Code, "'(d)omestic use' means any use of water for individual personal needs and for household purposes such as drinking, bathing, heating, cooking, noncommercial gardening, and sanitation (*emphasis added*)." (HRS § 174C-3.) The purpose of this definition in the Code is to exempt individual users from the permit provisions of the Code: "(N)o permit shall be required for domestic consumption of water by individual users..." (HRS § 174C-48(a).) On the other hand, "domestic uses of the general public" acknowledges "the general public's need for water," and "the public trust applies with equal impact upon the control of drinking water reserves (*quotation marks in original deleted*) ." (*Waiāhole I*, 94 Haw. at 136-138; 9 P.3d at 448-450.)

118. MDWS is also a non-riparian diverter of East Maui stream waters, and under the common law, its continuing use of stream waters is permissible if the use is reasonable and beneficial and will not actually harm the established rights of appurtenant and riparian landowners. (COL 67-68.)

119. For MDWS's use of East Maui stream waters, there is a potential conflict between the public trust doctrine and the common law. Under the public trust doctrine, there is a ~~presumptive~~ *presumption* in favor of trust purposes, and competing water uses must be weighed on a case-by-case basis. Under the common law, MDWS's use must not actually harm the established rights of appurtenant and riparian landowners. While some appurtenant rightsholders are also likely to have traditional and customary Hawaiian rights in their exercise of appurtenant rights, *supra*, COL 89, and also have a presumption in their favor, they do not have priority over MDWS as a purveyor of domestic water uses of the general public, and competing uses must still be weighed on a case-by-case basis according to any appropriate standards provided by law.

120. The Public Trust Doctrine applies in all situations, whether or not in a water management area, and whether or not the common law applies.

121. The appropriate standard is a cost-benefit analysis in weighing appurtenant and riparian uses with MDWS as a purveyor of domestic water uses of the general public.

122. Finally, MDWS is a public entity for actual public use. If MDWS's diversions are ruled improper, appurtenant and riparian rightsholders cannot obtain injunctive relief (but may seek damages) against MDWS because of the public use doctrine, *supra*, COL 31.

b. Losses

123. The 1.1-mile Upper Waikamoi Flume, which serves the Olinda WTP, was estimated to lose as much as 40 percent of total flow through cracks and holes along its whole length. Actual losses could not be measured, because MDWS had no mechanism for quantifying water levels at either the intake or discharge sites of the flume. If reliable capacity of the Olinda WTP is the reported 1.6 mgd, then the flume could have lost as much as 0.64 mgd (1.6 mgd x 0.40) at that level of operation. (FOF 475-478.)

124. MDWS has just completed replacing the entire flume, as well a completely relining the two 15 million-gallon Waikamoi reservoirs and the 2 million-gallon on-site basin a the Olinda WTP. (FOF 479, 482.)

125. With the new flume, MDWS will be able to calculate how much water is coming from the flume on days when the main intake from the dam is dry, which is most of the days. (FOF480.)

c. Alternative Sources

126. New reservoirs, which would be fed by streams in times of water surplus for use during times of low flows, are not alternatives to using stream waters but a means of mitigating the impacts of reduced availability of stream waters. Reservoirs mitigate fluctuations in both stream flow and consumer demand, and mitigations in fluctuations in stream flow allow more of it to be used at the proper time. (FOF 484, 486.)

127. New production wells are not an alternative to serve the Upcountry areas in the immediate and intermediate future. Water is heavy, so moving it to higher elevations such as where much of the Upcountry System is located, at 1000 to 4000 feet, from basal aquifers at sea level is projected to cost $1.64 per thousand gallons for distribution from the Kamole-Weir

WTP, $4.07 per thousand gallons at the Piiholo WTP, and $593 per thousand gallons at the Olinda WTP. MDWS's current charges for water only average about $4 per thousand gallons, so just the electrical costs to pump the water is more than what MDWS charges overall for its entire operation. On top of pumping costs, there would be substantial initial capital expenditures and on-going maintenance. (FOF 483.)

128. MDWS has also entered into a Consent Decree, which requires that MDWS conduct vigorous cost/benefit analyses of other water source options before developing ground water in the East Maui region, and has tried unsuccessfully on several occasions to work within the framework of the consent decree to develop new ground water sources. (FOF 483.)

d. Economic Impact

129. Under the MOU between EMI and MDWS, MDWS can receive 12 mgd with an option for an additional 4 mgd, *for a total of 16 MGD*. During low-flow periods when ditch flows are greater than 16.4 mgd, both will receive a minimum allotment of 8.2 mgd. If these minimum amounts cannot be delivered, both will receive prorated shares of the water that is available. In recent periods of low Wailoa Ditch flow, EMI has not restricted the allotment of water to MDWS according to the terms of the agreement, and MDWS withdrawals have been limited only by the amounts of water available in the ditch and the physical limitations of the existing Kamole-Weir WTP intake structures. During drought conditions, MDWS may withdraw 6 mgd, and what remains is used by HC&S for irrigation. (FOF 492.)

130. There would be little or no impact if Wailoa Ditch flows were reduced *by* 15 mgd. MDWS would not have full access to the 6 mgd capacity of the Kamole-Weir WTP for 5 days, the same as for the period 2001 to 2011, and less than the maximum of 16 days for the period 1922 to 1987. (FOF 497.)

131. With a 20 mgd reduction in Wailoa Ditch flow and assuming a daily drought period withdrawal of 5.0 mgd, there would not be sufficient water to provide reliable drought period capacity without some mitigating actions. For a 23,680 day period, *supra*, FOF 495, 5.0 mgd would not be able to be withdrawn for 822 days or 3.47 percent, with 54 consecutive days of deficiency. (FOF 498.)

132. The deficiency only means that 5 mgd could not be withdrawn. Lesser amounts could still be withdrawn from the Wailoa Ditch. Furthermore, while the study defined drought period

deficiency as being less than 4.6 mgd of a total capacity of 6 mgd, actual use from the Kamole-Weir WTP has been 3.6 mgd out of the total capacity of 6 mgd. (FOF 499.)

133. With the addition of a 100-million gallon reservoir at the Kamole-Weir WTP, the drought period reliable yield with the 20 mgd reduction in Wailoa Ditch flow would be 4.6 mgd, approximately equal to the existing WTP reliable yield without reductions in ditch flows. (FOF 500.)

134. With a 200-million gallon reservoir, the drought period reliable yield with the 20 mgd reduction in Wailoa Ditch flow increases to 7.1 mgd, an increase of 2.4 mgd compared to a 100-million gallon reservoir and greater than the total capacity of 6 mgd of the Kamole-Weir WTP. (FOF 501.)

135. Estimated costs of a 100- to 200-million reservoir at the Kamole-Weir WTP are $25.25 million, and life-cycle costs over 25 years are estimated at $33 per thousand gallons or $250 million. (FOF 502.)

H. Balancing of Instream versus Noninstream Uses

b. MDWS (Page 136, ¶ 27 - Page 138, ¶ 30)

254. MDWS diverts water:

a. at its upper Waikamoi Flume from the Waikamoi, Puohokamoa, and Haipuena Streams (FOF 73);

b. at its lower Waikamoi Flume from the Waikamoi, Puohokamoa, Haipuaena, and Honomanu Streams (FOF 74); and

c. draws water from EMI's Wailoa Ditch, which diverts multiple streams, including all the streams for which amended IIFS are being proposed, except that Waiokamilo Stream is reported as no longer being diverted (FOF 167).

255. The Upper Waikamoi Flume diverts an average of 1.6 mgd from Waikamoi, Puohokamoa, and Haipuaena Streams for treatment into potable water at the Olinda WTP. (FOF 73.)

256. The 1.6 mgd represents 21 percent of the 7.7 mgd average daily potable water production for MDWS's Upcountry System. (FOF 73-74, 77.)

257. From upstream to below the Upper Waikamoi Flume, no habitat has been lost from either flow diversions or barriers on Waikamoi, Puohokamoa, or Haipuaena Streams. (2009 Habitat Availability Study (*see* FOF 102), p. 97, Table 13.)

258. The Lower Waikamoi Flume diverts an average of 2.5 mgd from Waikamoi, Puohokamoa, Haipuaena, and Honomanu Streams. (FOF 74.)

259. The 2.5 mgd represents 32 percent of the 7.7 mgd average daily potable water production for MDWS's Upcountry System. (FOF 73-74, 77.)

260. From below the Upper Waikamoi Flume to below the Lower Waikamoi Flume, Waikamoi Stream has lost 1.8 percent of total habitat units from flow diversion and 3.6 percent from a barrier. (2009 Habitat Availability Study, p. 96-97, Table 13.)

261. For restoration of flows to 64 percent of BFQ_{50}, or H_{90}, DAR had recommended no change at the Upper and Lower Kula Flumes except to address the barriers, recommending instead that flows be restored at the Wailoa Ditch or its counterparts (Ko'olau and Spreckels ditches) and lower for Waikamoi Stream. (C-103, p. 1-1.)

262. Thus, there are no competing costs and benefits between restoring Waikamoi Stream and continued diversions by MDWS at its Upper and Lower Waikamoi Flumes. MDWS could continue to divert 53 percent of potable water supplies for its Upcountry System, and Waikamoi Stream could be restored to H_{90}.

263. EMI's Wailoa ditch, which diverts multiple streams, including all of the streams for which increased IIFS are being proposed, is the source of water for MDWS's Kamole water treatment facility. The Kamole facility's average daily production is 3.6 mgd, with a capacity of 6 mgd. (FOF 77.)

264. HC&S's Hamakua ditch (the western extension of the Wailoa ditch), at reservoir 40, is the source of water for Kula Agricultural Park. (FOF 79.)

265. Average daily use by MDWS from the Wailoa ditch is 7.1 mgd, which includes water for the Kamole facility and Kula Agricultural Park. (FOF 83.)

266. The impact on MDWS's provision of water for upcountry Kula would be a potential loss of up to 47 percent (3.6 mgd/7.7 mgd) of its average daily potable water production, and loss of the only source of water for Kula Agricultural Park.

267. The proposed amended IIFS restoring 18 mgd would come mostly from the Ko`olau Ditch, which becomes the Wailoa Ditch as water flows westerly toward HC&S's fields. (*See* Exh. C-1, attached.)

268. MDWS's agreement with EMI provides that MDWS will receive 12 mgd from the Wailoa ditch with an option for an additional 4 mgd *for a total of 16 MGD*. During periods of low flow, no water will be diverted to lower-elevation ditches, and MDWS will receive a minimum allotment of 8.2 mgd and HC&S will also receive 8.2 mgd. If these minimum amounts cannot be delivered, MDWS and HC&S will receive prorated shares of the water available. (FOF 82.)

269. Therefore, the 18 mgd in proposed restored flows will come from HC&S's share of the water unit flows begin to drop below 34.4 mgd (18 mgd + 8.2 mgd + 8.2 mgd = 34.4 mgd). Average Wailoa Ditch flow from 1922 to 1987 has been 108.8 mgd, with flows less than 42.46 mgd for five days out of a year. *Based on the average flow of 108.8 mgd in the Wailoa Ditch, accommodation of the 18 mgd in proposed restoration, as well as the full 16 mgd provided for under the MOU, HC&S would still have access to an average of 74.8 mgd and will have less than 8.4 mgd for only five days out of the year.* (FOF 70.).

270. Therefore, MDWS's *current water* use of 7.1 mgd, *and a total usage of up to 16 mgd under the terms of the MOU* from the Wailoa Ditch would seldom compete with the amended IIFS's increased needs for 18 mgd and if such competition occurs, it would be for only a few days a year, *supra*, COL 269.

271. Furthermore, while MDWS's needs would be at least 3.6 million gallons daily for potable water (the Kula Agricultural Park use of 3.5 mgd could be met for a few days by its 5.4 million gallon reservoirs [FOF 79]), the 18 mgd for the amended IIFS would be spread among 9 streams, *supra*, COL 242, and temporary, modest decreases in flow for irrigation and habitat would be better tolerated than decreases in available potable water for Upper Kula residents.

272. Full use of the 16 mgd allowable under the MOU would not only accommodate the current daily use of approximately 7.1 mgd used by MDWS for the Kula Agricultural Park and the Kamole water treatment facility, but would also allow for MDWS to meet the majority of its 9.1 mgd of future needs as reflected by the county's upcountry waitlist and future population growth.

273. Accordingly, usage of the 16 mgd provided by the MOU is a reasonable and beneficial use of water from the Wailoa Ditch. FOF 82, 83, 471-473; COL 114, 129

274. While the Kamole Treatment Plant currently cannot process a total of 12.5 mgd (16 mgd less 3.5 mgd used for the Kula Agricultural Park), assurance of access to such water provided by the MOU, the decreased need of HC&S for water, and greater certainty regarding the amount of water available resulting from the setting of Interim Instream Flow Standards would help MDWS justify a capital expenditure to expand the Kamole Treatment Plant. FOF 77.

~~272~~. *275* Finally, resource protection--i.e., instream uses--is not a categorical imperative; there are no absolute priorities among trust purposes--e.g., between stream restoration and domestic uses of the general public, particularly drinking, *supra*, COL 12.

~~273~~. *276* Thus, the weighing of costs and benefits is in favor of MDWS's continued use of its share of Wailoa Ditch diversions *up to the full 16 mgd allowed under the MOU.*

I. Land Use of the Central Maui Fields

1. General Policies

276. As a whole, the policies of the County of Maui, as well as zoning designations set forth by the Maui County Code and the Hawaii Revised Statutes, are consistent with, and show a preference for maintaining agricultural on the lands utilized by HC&S/A&B for sugar cultivation which rely on surface water from the streams that are the subject of this contested case hearing ("HC&S/A&B Central Fields"). FOF 503 – 538; COL 277 – 283; Kathleen Ross Aoki, Tr., February 8, 2017, p. 396, ¶¶ 1-3

2. Countywide Policy Plan

277. Several of the core values of the Countywide Policy Plan strongly promote keeping current agricultural lands in agriculture, and increasing diversified agriculture. Kathleen Ross Aoki, Tr., February 8, 2017, p. 396, ¶¶ 1-3; FOF 508-511.

278. Keeping HC&S/A&B's Central Fields in agriculture would support the CPP's core principal to "protect the natural environment," by maintaining both open space and scenic green view planes in Maui's central isthmus. FOF 509.

279. HC&S/A&B's plan to diversify agriculture would also support the CPP's core principle to promote sustainable land use and growth management" FOF 510.

280. HC&S/A&B's plan to diversify agriculture would also support the CPP's core principle to "strengthen the local economy." FOF 511.

3. Maui Island Plan/General Plan 2030

281. Keeping HC&S/A&B's Central Fields in agriculture supports the Maui Island Plan's core principals to "preserve rural and agricultural lands and encourage sustainable agriculture" and "support efforts that contribute to a sustainable and diverse economy for Maui." Exhibit "B-065," p. 1-16; Kathleen Ross Aoki, Tr., February 8, 2017, p. 396, ¶¶ 1-3; FOF 512-517.

282. In addition, the Maui Island Plan supports the proposed transition of HC&S/A&B's Central Fields to diversified agriculture. FOF 518 - 521.

4. Community Plans

283. Elements of the four community plans touching upon the HC&S/A&B Central Maui Fields support keeping those fields in agriculture, as well as transitioning to the use of those lands for diversified agriculture. Kathleen Ross Aoki, Tr., February 8, 2017, p. 396, ¶¶ 1-3; FOF 522 - 538.

DATED: Wailuku, Maui, Hawaii, June 7, 2017.

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COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII

PETITION TO AMEND INTERIM INSTREAM FLOW STANDARDS FORHONOPOU, HUELO (PUOLUA), HANEHOI, WAIKAMOI, ALO, WAHINEPEE, PUOHOKAMOA, HAIPUAENA, PUNALAU/KOLEA, HONOMANU, NUAAILUA, PIINAAU, PALAUHULU, OHIA (WAIANU), WAIKAMILO, KUALANI, WAILUANUI, WEST WAILUAIKI, EAST WAILUAIKI, KOPILIULA, PUAKAA, WAIOHUE, PAAKEA, WAIAAKA, KAPAULA, HANAWI, and MAKAPIPI	CASE NO. CCH-MA13-01 CERTIFICATE OF SERVICE

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on this date a true and correct copy of the foregoing document was duly served, via email to the following, with hard copies to follow via U.S. mail, pursuant to the Minute Order, upon the following individuals as follows:

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